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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,545	10/27/2005	Maurizio Galimberti	07040.0224	6976

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FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER  
LLP  
901 NEW YORK AVENUE, NW  
WASHINGTON, DC 20001-4413

EXAMINER

FISCHER, JUSTIN R

ART UNIT	PAPER NUMBER
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1733

MAIL DATE	DELIVERY MODE
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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/534,545	<b>Applicant(s)</b> GALIMBERTI ET AL.	
	<b>Examiner</b> Justin R. Fischer	<b>Art Unit</b> 1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 51-100 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 51-100 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>51105, 102705</u> | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 51-62, 65-67, 72, 73, 76-79, 81, 82, 84, 85, 88-91, 93, 94, 96, 97, and 100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weber (US 4,602,052) and further in view of Tokumoto (JP 11-116653). A machine translation of JP '653 has been provided to more clearly set forth the teachings of the reference.

Weber is directed to a diene based rubber composition having carbon black and further including a quaternary ammonium salt (Abstract and Column 3, Lines 30-50). While the reference fails to expressly describe a tire incorporating the above noted composition, one of ordinary skill in the art at the time of the invention would have readily appreciated such a construction in view of the general disclosure of Weber. In particular, Weber is directed to the improvement of carbon-black filled, natural rubber compositions, which are one of the most commonly used, if not the most commonly used, rubber composition in the tire industry- a fair reading of Weber would have suggested a tire construction having the above noted composition.

As to the type of quaternary ammonium salt, Weber teaches the use of any quaternary ammonium salt (Column 4, Lines 20+). More particularly, Weber suggests preferred embodiments having multiple nitrogen atoms (Column 5, Lines 1-40), as

opposed to more conventional quaternary ammonium salts having a single nitrogen atom and four hydrocarbon moieties. While the claimed ammonium salt is not expressly disclosed in the preferred embodiments, said ammonium salt represents a known ammonium salt that has been previously used in elastomeric compositions, as shown for example by Tokumoto (Abstract, Paragraph 10, and Equation 1,  $n=0$ ). It is emphasized that Weber suggests the use of any quaternary ammonium salt and more particularly, describes preferred embodiments having two nitrogen atoms. Thus, one of ordinary skill in the art at the time of the invention would have found it obvious to use any of the known quaternary ammonium salts, especially those having two nitrogen atoms, such as those described by Tokumoto. It is additionally noted that the quaternary ammonium salt described by Tokumoto is extremely similar to those detailed in Weber (Column 5, particularly (II)) and it is described as being usable in elastomeric compositions used in the automotive industry- thus, there would have been a reasonable expectation of success in forming the composition of Weber with the ammonium salt of Tokumoto. Lastly, applicant has not provided a conclusive showing of unexpected results to establish a criticality for the claimed quaternary ammonium salt.

Regarding claim 52, the claim discloses structural elements define the fundamental structure of modern day tire constructions. Furthermore, one of ordinary skill in the art at the time of the invention would have found it obvious to use the composition of Weber in any of the fundamental tire components, including the tread.

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Lastly, the tread is well recognized as being formed of a carbon black-filled, natural rubber composition.

With respect to claims 53, 54, 77, 78, 89, and 90, the tire composition of Weber is not expressly described as including secondary accelerators or DPG.

As to claim 55, the anion of Tokumoto can be a carbonic acid radical or an organic acid radical (Paragraph 10), which is seen to satisfy equation (II) of the claimed invention.

Regarding claim 56, the claim is only relevant when the ammonium salt has the form of equation (III).

With respect to claim 57, the anion of Tokumoto (carbonic acid radical or organic acid radical) satisfies the requirements for  $R_6$ .

As to claims 58-60, while Tokumoto generically describes the moieties as being hydrocarbon radicals, Weber clearly recognizes the claimed combinations as being consistent with those commonly used in quaternary ammonium salts (Column 6, Lines 55+). Absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it obvious to form any of the claimed combinations (N atom and hydrocarbon radical, whether it is straight chained or a ring). It is emphasized that there a plurality of potential combinations, as evidenced by the plurality of claimed combinations, and applicant has not provided a conclusive showing of unexpected results.

Regarding claims 61, 62, 79, and 91, the rubber composition of Weber comprises less than 15 phr of an ammonium salt (Column 3, Lines 10-20).

With respect to claims 65, 66, 81, and 93, the rubber composition of Weber is formed entirely of natural rubber or as a mixture comprising at least %5 natural rubber and additional rubbers, such as polybutadiene or synthetic polyisoprene (Column 3, Lines 30-50). While the reference fails to specifically include an EPR or an EPDM, such rubbers represent well known and conventional rubbers that are extensively used in tire rubber components. It is emphasized that Weber does suggest a rubber composition formed as a mixture of natural rubber and additional rubbers, as is conventional in the tire industry- the particular selection of any well known rubber would have been well within the purview of one of ordinary skill in the art at the time of the invention. Lastly, it is noted that polybutadiene and synthetic polyisoprene are exemplary in the disclosure of Weber.

Regarding claims 67, 82, and 94, Weber (Column 8, Line 10) suggests the use of "suitable accelerators commonly used in the art"- such a disclosure is recognized as including primary accelerators.

With respect to claims 72, 73, 84, 85, 96, and 97, the rubber composition of Weber comprises between 30 and 200 phr of carbon black (Column 4, Lines 1-10).

3. Claims 63, 64, 80, and 92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weber and Tokumoto as applied in claim 51 above and further in view of Yamaguchi (US 6,550,508). As detailed above, Weber is directed to carbon-black filled rubber composition formed entirely of natural rubber or of a mixture having at least 5% of natural rubber (Column 3, Lines 30-50). While Weber fails to expressly list the glass transition temperatures of natural rubber and the additionally mentioned

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diene-based rubbers, the claimed value below 20 degrees Celsius is consistent with the commonly used diene-based rubbers, as shown for example by Yamaguchi (Column 6, Lines 45-60).

4. Claims 68-71, 83, and 95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weber and Tokumoto as applied in claim 51 above and further in view of Vasseur (US 7,199,175). As detailed above, Weber suggests a rubber composition comprising "any suitable accelerator commonly used in the art". Although the reference fails to expressly identify specific types of accelerators, the claimed accelerators represent the well known and commonly used accelerators in the tire industry, as shown for example by Vasseur (Column 14, Lines 45-55). One of ordinary skill in the art at the time of the invention would have found it obvious to include any of the known accelerators in the rubber composition of Weber in view of Tokumoto.

5. Claims 74, 86, and 98 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chauvin (US 6,982,050) and further in view of Tokumoto. Chauvin discloses a tire construction in which a tread can be formed of the following composition: diene based rubber component, quaternary ammonium salt, carbon black, and silica (Column 3, Line 58 – Column 4, Line 24). While the reference fails to list specific types of said salts, the claimed class of ammonium salts is known and more particularly, have been used in elastomeric compositions in the automotive industry (Paragraphs 14 and 32). While Tokumoto generally describes the use of such a salt in a polyurethane composition, the claimed class of ammonium salts is more broadly described as being highly active, which reduces the loading of said salt, and promoting

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a high degree of moldability, both of which would be desirable in all elastomeric compositions used in the tire industry (Paragraphs 33 and 34). Absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it obvious to include the claimed class of ammonium salts in the tire rubber composition of Chauvin. Lastly, a comparison between the claimed ammonium salt and Bardac ® is not persuasive, because it is unclear if Bardac ® is an ammonium salt having an additional, non-ionic nitrogen atom or if it is a conventional ammonium salt having four hydrocarbon groups.

6. Claims 75, 87, and 99 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chauvin and Tokumoto as applied in claims 74, 86, and 98 above and further in view of Lucas (US 5,681,874). As detailed above, Chauvin in view of Tokumoto substantially teaches a tire construction incorporating the claimed rubber composition, for example in a tire tread component. In this instance, Chauvin discloses a composition having carbon black and silica, as is extremely common in the tire industry. While the reference fails to expressly suggest the inclusion of a silica coupling agent, such an additive is conventionally included in compositions having silica in order to provide a strong connection between the filler (silica) and the base rubber composition, as shown for example by Lucas (Abstract and Column 2, Lines 35-50). In essence, the silica coupling agent functions as a bridge between the silica and the base rubber composition since they generally have low compatibility. Thus, one of ordinary skill in the art at the time of the invention would have found it obvious to include a silica coupling agent in the rubber composition of Chauvin.



***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R. Fischer** whose telephone number is **(571) 272-1215**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Justin R Fischer  
Primary Examiner  
Art Unit 1733

JRF  
May 24, 2007